HP StorageWorks

Emulex host bus adapters for Integrity Linux and Windows systems release notes

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Description

These release notes contain information about drivers, firmware, and other supplemental information for the Emulex host bus adapters (HBAs) for Integrity Linux® and Microsoft® Windows® systems described in "Product models" on page 1.

Update recommendation Routine

Product models

The following HBAs support Linux and Windows:

- HP StorageWorks FC2143 (product number AD167A)
- HP StorageWorks FC2243 (product number AD168A)

The following HBAs support only Windows:

- HP StorageWorks AB232A (product number AB232A)
- HP StorageWorks AB466A (product number AB466A)
- HP StorageWorks AB467A (product number AB467A)
- HP StorageWorks A7298A (product number AB466A)

Devices supported

The Emulex HBAs for Integrity Linux and Windows are supported on HP server platforms that:

- Support the Linux operating systems described in "Operating systems" on page 2.
- Support the Windows operating systems described in "Operating systems" on page 2.
- Support the servers listed on the HP web site http://www.hp.com/products1/serverconnectivity/support_matrices.html.

NOTE:

See your HP server PCI slot specifications to determine if the server and HBA are compatible.

- Support B-Series, C-Series, and M-Series switch products. See the HP support web site for the latest firmware information for switches: http://welcome.hp.com/country/us/en/support.html.

  Or, see the *HP StorageWorks SAN design reference guide*: http://h18006.www1.hp.com/products/storageworks/san/documentation.html.
- Support the following storage arrays:
  - Modular Smart Array 1000
  - Modular Smart Array 1500
  - Enterprise Virtual Array 3000/5000 GL
  - Enterprise Virtual Array 4000/6000/8000 XL
  - XP12000, XP1024/128, XP512/48

  For the latest supported array firmware, see the HP storage array web site: http://h18006.www1.hp.com/storage/arraysystems.html.
- Emulex MultiPulse 2.1.6 driver

NOTE:

Active/Passive Storage arrays are only supported in single-path mode.

Operating systems

Linux

The following are requirements for HBAs that support Linux:

- Linux operating systems:
  - Red Hat® Enterprise Linux 3, Update 6 and 7
  - Red Hat Enterprise Linux 4, Update 2 and 3
  - SUSE™ Linux Enterprise Server 8, SP4 and SP5
  - SUSE Linux Enterprise Server 9, SP2 and SP3
- Linux firmware and BIOS:
  - HBA firmware: 2.10a7
  - Linux EFI: 3.11a4
- Linux driver: 8.0.16.21 (2.6 kernel)
- Emulex MulitPulse driver 2.1.6:
  - 2.6 kernel only
  - Red Hat Enterprise Linux 4, Update 3
  - SUSE Linux Enterprise Server 9, SP3

Windows

The following are requirements for HBAs that support Windows:

NOTE:

The FC2143 and FC2243 HBAs are supported only with the Storport driver on Windows Server 2003 SP1 for Itanium-based systems.

- Enterprise and Datacenter editions of:
  - Windows Server 2003 for Itanium-based systems
  - Windows Server 2003 SP1 for Itanium-based systems

    Microsoft hotfix-If you are using the Storport miniport driver with Windows Server 2003 for Itanium-based systems, with or without SP1, you need the Microsoft QFE-916048.

    This hotfix contains updates for Microsoft's `storport.sys` driver.

    To obtain the QFE, see the web site http://support.microsoft.com/kb/916048.
  - Windows firmware: 2.10a7
  - EFI driver: 3.11a4
  - Windows Pair boot BIOS: 5.10a8 (contains the 1.70a3 driver and the 3.11a4 EFI driver)
  - SCSIPORT miniport drivers: AB232A, AB467A, and A7298A: 1.91a1
  - Storport miniport drivers: AB232A, AB467A, A7298A, FC2143 and FC2243: 6-1.11x1
  - HBA Firmware:
    - FC2143 and FC2243: 2.10a7
    - AB232A, AB467A, A7298A: 1.91a1

HBA utilities

The following HBA utilities are supported:

- LPUTILNT: 1.8a15
- HBAnyware:
  - Linux: 2.1a35
  - Windows: 2.1a19

Languages

English

Prerequisites

- Your system must be running one of the operating system versions in "Operating systems" on page 2.
- See your server's HP server PCI slot specifications to determine if your server is compatible with these HBAs.

Enhancements

Windows driver parameters supporting multiple arrays

With the HP common set of Windows miniport driver parameters, a Windows host can access EVA, MSA, and XP storage arrays simultaneously. Table 1 lists the supported parameters for configurations in which a Windows host accesses different storage array types simultaneously.

The Storport miniport driver's registry entry includes only the NodeTimeOut, LinkTimeOut, and QueueTarget parameters. All other parameters use the Emulex defaults. For more information, see the HP Smart Component documentation.

NOTE:

An asterisk (*) indicates the HP-specific Storport miniport driver parameters. Some of the parameters in Table 1 may not be defined for Storport miniport drivers, or may have a different name.

Table 1 Windows driver parameters

Parameter	HP default multipath setting
QueueDepth	32
ResetTPRLO	2
NodeTimeOut*	10
LinkTimeOut*	40
HLinkTimeOut	5
NumberOfRequests (SCSIPORT miniport only) NumFcpContext* (Storport miniport only)	150 512
MaximumSGList (SCSIPORT miniport only)	129
Interrupt coalescing uses the three following parameters: CrfIntrpt CrfMSCnt CrfRspCnt	 1 1 8
QueueTarget*	1
EmulexOption	0xBA00
DiscMethod	1
Hot Plug I/O TimeOut	30
Topology	2
EnableDPC	1
ElsRetryCount	6
SimulateDevice	1
ErrRetryMax	0

Note the following about the miniport driver parameters in Table 1:

- The SimulateDevice parameter has been replaced by a separate key, CreateInitiatorLu. This key is not part of the driver parameter string in newer versions of miniport drivers.
- More parameters are available but remain unchanged from the Emulex defaults. See one of the following Emulex files for information about parameter definitions:
  - For SCSIPORT, see readme.txt.
  - For Storport, see Storport driver parameters.doc.

    To obtain these files, double-click the Smart Component executable, then click **Extract** to place a copy of all Smart Component files in the folder you select.
- Table 1 does not describe single-path and transparent-failover configurations.
- Parameters listed in Table 1 may not show up in the registry if their values are driver defaults.

The HP default for the Emulex SCSIPORT miniport driver string is:

```
EnableDPC=1;NodeTimeOut=10;LinkTimeOut=40;HLinkTimeOut=5;
ElsRetryCount=6; SimulateDevice=1;ResetTPRLO=2;EmulexOption=0xBA00;
ErrRetryMax=0; CrfIntrpt=1;CrfMSCnt=1;CrfRspCnt=8;QueueTarget=1;
```

The HP default for the Emulex Storport miniport driver string is:

```
NodeTimeOut=10;LinkTimeOut=40;QueueTarget=1;
```

Fixes

SCSIPORT miniport driver

On Windows Server 2003 systems, clients may be disconnected, generating Event ID 11 and Event ID 15 in the application log. This problem may occur under high-stress conditions due to a SCSIPORT miniport driver error. This problem may also cause network time-outs if remote computers are accessing data on drives that use the SCSIPORT driver on the Windows Server 2003 system.

To correct this problem, install the latest Microsoft QFE from the following web site: http://support.microsoft.com/default.aspx?scid=kb;en-us;895573.

Installation instructions

This section describes HBA and HBA drivers installation information.

Using the Smart Component

This section describes how to use the HP Smart Component to install drivers, HBA utilities, and display HBA information.

Using the Smart Component with single-path storage

If storage arrays are connected through a single path, install the Smart Component using the command line interface as follows:

1. Use the CD command to go to the directory where you downloaded the Smart Component.
2. Enter the following command:

   `cp00xxxx/cfg:s`

   The *xxxx*is the Smart Component version number.

This method causes the Error timeouts to be set to the maximum value.

Using the Smart Component to install drivers and utilities

To install HBA drivers and HBA utilities, including HBAnyware, obtain the latest Smart Component for your configuration and copy it to your desktop. Double-click the Smart Component executable, and then click **Install**. The installation completes automatically.

If you are performing a driver upgrade, HP recommends that, prior to launching the installation, you verify that the current driver registry parameter settings match those in Table 1. If there are any discrepancies, launch the Smart Component using the command prompt window.

To launch the Smart Component and upgrade the driver:

1. Open a command prompt window.
2. Use the `cd` command to set the current directory to the folder containing the Smart Component.
3. Enter the following command:

   `cp00xxxx.exe /X`

   The *xxxx* is the numerical value in the Smart Component name. This command installs the new driver and ensures that the driver registry parameter settings are Emulex defaults or HP modified values.

   For more information about Smart Component installation options, see `ElxS***Readme.txt`. To obtain a copy of this document, double-click the Smart Component icon and click **Extract** to copy all Smart Component files to the folder you select.

Smart Component facts

The Smart Component kit comprises multiple subcomponents; however, you should not manually change any subcomponents. Changing a subcomponent after installation can lead to problems when you run a different version of the Smart Component.

The version file of the Smart Component on your system upgrades or downgrades the subcomponents only when you run another version of the Smart Component. The version file does not change by upgrading or downgrading a subcomponent, such as a driver, application, or configuration. You may see the following messages:

Table 2 Smart Component messages

This message:	Occurs when:
`The software is installed and up to date.`	You install the Smart Component and then manually upgrade or downgrade the driver.
`The software is installed but is not up to date.`	You install a newer Smart Component than the one currently installed.
`The software is installed but the installed version is newer than the version you are attempting to install.`	You attempt to install an older Smart Component when a newer version is present.
`The software is installed but is not up to date. A manually upgraded driver may get downgraded as a result of running the Smart Component kit.`	You install the Smart Component 1.0.0.0, which contains subcomponent driver 3.0.0.0, and you manually update the driver from 3.0.0.0 to 4.0.0.0. The Smart Component retains the Smart Component 1.0.0.0 with driver 3.0.0.0. If you install a new Smart Component kit (such as 2.0.0.0, which contains driver 3.5.0.0), the installation detects the previous Smart Component kit version (1.0.0.0) and displays the message.

Important information

This section describes restrictions and other important information for the HBAs.

Linux

The following known restrictions apply to Linux and this release of the HBAs:

- The Emulex MultiPulse 2.1.6 driver only supports Active/Active storage arrays.
- Emulex-based solutions support single-path HP StorageWorks configurations only. Secure Path, Device Mapper, and third-party multipath software are not supported at this time.
- Because the order in which a switch reports Fibre Channel ports to a name server can vary, the order in which LUNs are discovered can vary between system boots. Use a LUN persistency tool to ensure that the name of a device does not change between system boots.

  HP recommends that you use the `Udev` utility to ensure that the name of a device does not change between system boots. For detailed information, see the web site http://www.kernel.org/pub/linux/utils/kernel/hotplug/udev.html.
- When installing a new operating system, load the operating system and then download and install the supported Linux HBA driver from the following HP web site: http://welcome.hp.com/country/us/en/support.html.
- A page allocation failure may occur intermittently when running a management application such as HBAnyware. The subsequent trace may contain `lpfcdfc` in the stack. This event does not affect the functionality, and can be ignored.
- For Linux operating systems running on rx7620 and rx8620 servers with FC2243 HBAs, there is a limit of four FC2243 HBAs per server.

- The following restrictions apply to 4Gb HBAs (FC2143 and FC243):
  - These HBAs are not supported on Integrity servers with 2.4 Kernels.
  - Booting from a storage area network (SAN) is not supported on 2.4 kernels with these HBAs.

Windows

This section describes fixes and restrictions for Windows and these HBAs.

Storport miniport driver installation restrictions

If you are upgrading to the Storport miniport driver, consider the following:

- The Storport miniport driver is supported only on Windows 2003 with SP1 for Integrity systems.
- You can mix SCSIPORT and Storport miniport drivers for HBAs from different vendors in the same server. However, all HBAs from a single vendor must operate exclusively with either all SCSIPORT miniport drivers or all Storport miniport drivers.
- If you are running Secure Path for Windows, you must upgrade to Secure Path 4.0c SP2 or later for Windows. Storport is not supported with earlier versions of Secure Path.

FC2243 HBAs and booting from a storage area network

In a 4GB SAN environment with a multi-pathed storage device using both ports of an FC2243 HBA, if you encounter problems installing software for boot from SAN, disable the BIOS (using LP6DUTIL or another HBA utility) on any other HBAs present in the server.

HBAnyware

Consider the following restrictions for HBAnyware:

- For Windows systems, you must use HBAnyware 2.1a15 or later. HP recommends that you use the latest version.
- You must uninstall any previous versions of HBAnyware before installing the drivers.
- Using HBAnyware to upgrade firmware causes the BIOS information to display as `Not Present`.

  If you upgrade the HBA firmware with HBAnyware, and use the HBA to boot from a storage area network, reinstall the BIOS or the Pair Boot Code. For detailed information about booting from a storage area network, see the *Booting Windows Server 2003 for Itanium-based systems from a storage area network application notes* available at http://h20000.www2.hp.com/bizsupport/TechSupport/DocumentIndex.jsp?contentType=SupportManual&locale=en_US&docIndexId=179911&taskId=101&prodTypeId=12169&prodSeriesId=406734.
- Before disabling or uninstalling an HBA using Device Manager, you must close HBAnyware.

Smart Component

- When using the Smart Component to install drivers, if you observe the following message during reboot, ignore the message and complete the reboot procedure. No known issue has been observed in connection with the display of this message:

  ```
  The application failed to initialize because the windows station is shutting down.
  ```
- When booting as a single-path boot device from a Modular Smart Array (MSA) directly attached through an I/O module to the HBA, you may lose connectivity temporarily to the boot LUN at the EFI driver level. If this occurs, restart the server. Temporary loss of connectivity only occurs during initial startup of the EFI driver and does not affect normal system operations.
- With Secure Path 4.0c SP1, during a rolling driver upgrade, a blue-screen error may occur under any of the following conditions:
  - The server boots from a storage area network (SAN).
  - All HBAs are accessing their LUNs in a single-path configuration.

- Any HBA is directly attached in a single path to its own MSA controller.

If the blue-screen error occurs, reboot the server and check the driver revisions to verify that the upgrade completed on all HBAs.

Upgrading to Secure Path 4.0c SP2 fixes this issue.

- When using the Smart Component to install drivers, if you observe windows with the following information during reboot, click **Finish**, do not reply to Microsoft, and then complete the reboot procedure. No known issue has been observed in connection with the display of these messages.

  The following messages may appear:

  - `There was a problem installing this hardware.  This device is not working properly because Windows cannot load the drivers required for this device.  (Code 31)`
  - `Uninstall and then reinstall your device.`

Compatibility/interoperability

On a Windows server, you can use SCSIPORT and Storport miniport drivers for HBAs from different vendors. However, on that server, all HBAs from a single vendor must operate exclusively with either all SCSIPORT miniport drivers or all Storport miniport drivers.

Determining current version

Use one of the following methods to determine HBA driver and firmware version.

Using HBAnyware

To use HBAnyware with Windows or Linux systems:

1. Start HBAnyware:
   - Enter the following command at a command line on your Linux or Windows system:
     `HBAnyware`
   - For Windows, you can alternatively click the HBAnyware icon.
2. Select **View**. Use one of the following options:
   - Group HBAs by HostName
   - Group HBAs by Fabric Address

   The HBAs appear in the Discovered Elements pane.
3. Click an HBA to display its information in the Adapter Summary pane.

   The driver and firmware version for that HBA appears in the summary.
4. Click the Firmware tab to view BIOS information.

Using Linux files

To view HBA information, locate files in Linux directories:

1. Go to the `sys/class/scsi_host` directory to view a list of SCSI HBAs. A numbered file (such as `host0` or `host1`) represents each HBA on the system.
2. Go to the `host`*n* directory for the selected HBA (for example, `host2`).
3. Review the following files for version information:

   `lpfc_drvr_version` contains driver information.

   `fwrev` contains firmware information.

Effective date

August 2006